

**ENVIRONMENTAL ASSESSMENT
ABO ARROYO WATERSHED
ENVIRONMENTAL QUALITY INCENTIVE PROGRAM**

INTRODUCTION:

This environmental assessment (EA) is being prepared by the United States Department of Agriculture Natural Resources Conservation Service (NRCS) to comply with the requirements of the National Environmental Policy Act of 1969 and implementing regulations at 40 CFR Parts 1500-1508. The EA will assist NRCS in determining whether the proposed action will have a significant impact on the quality of the human environment and therefore requires preparation of an Environmental Impact Statement.

NEED FOR PROPOSED ACTION:

There is a need to maintain a useable water supply for, communities, livestock and wildlife , and individual needs, reduce erosion, increase soil fertility, increase biodiversity, improve ecological site potential, and improve economic stability in the Abo Arroyo Watershed .

BACKGROUND:

The Abo Arroyo Watershed GPA contains 144,445 ac. of rangeland in southwest Torrance and southeast Valencia County in central New Mexico. The area is in the Canadian -Pecos Plains and Valleys (CP-3) Major Land Resource area. There are approximately 150 land owners including the US Forest Service, US Park Service, Bureau of Land Management, and New Mexico State Land Office. A map of the GPA is attached.

There are approximately 75 ranches. The ranch operations range from 5-500 animal units with 90% being strictly cow/calf . The area contains approximately 25 limited resource farmers. Per capita income is lower and unemployment higher than the New Mexico or the national average. Even though there is not an excess of ready cash to be used for conservation measures, the love for the land and willing acceptance of stewardship responsibilities has been passed down from generation to generation for over 300 years. Land owners are concerned about the declining water table, erosion, and lack of biodiversity and are willing to give of their time, energy, and money to solve the problems.

The Abo Arroyo Watershed encompasses the only natural pass between the Rio Grande Valley and the Estancia Basin. The watershed drains into the Rio Grande. The watershed has supported human inhabitation from prehistoric Native Americans up through early Spanish explorors to modern day Anglo-American settlers. Human activity has been predominantly agriculture in nature. Dryland farming intensified in the watershed 70 years ago. 30-50 years ago much of the farming ended and the fields were reseeded to native grasses. Today, livestock grazing has replaced dryland farming.

Biodiversity is absent. There is an ecosystem dominance of one-seeded juniper invading the watershed. As sites are dominated by woody species, competition for moisture, space,

light, and nutrients reduces herbaceous ground cover and increases wind and water erosion. The plant community has limited cool season herbaceous species and desirable shrubs are absent. Erosion is taking place at a rate of 134 ac. Ft. (235,000 tons) in an average year. Gully and channel-bank erosion contribute the most sedimentation. One of the largest users of water, through evapotranspiration, is the pinon/juniper trees dominating upland sites. 74,867 acres are infested. The estimated water loss per day for 100 trees per acre in the Abo Arroyo Watershed Health Plan is 104,813,800 gallons in the spring and 239,574,400 gallons in the summer . NRCS has recorded several tree counts ranging from 300 to 500 trees per acre which would amount to 3-5 times the amount of water consumed. Surface water loss is tremendous. The average annual water yield is approximately 0.1 in/ac/yr with the Manzano Mountains ranging from .05 to 2.0 in/ac/yr. Measured peak discharge has been measured at 18,300 CFS. Flooding is evident and riparian areas are destroyed. Wildlife diversity is absent due to reduced food and cover, and present species populations are limited. Soil fertility has been reduced because organic matter is not being produced, decomposition is not taking place, and the carbon and nitrogen cycles are interrupted.

ALTERNATIVES:

ALTERNATIVE 1. NO ACTION

ALTERNATIVE 2. PROPOSED ACTION: Use NRCS Environmental Quality Incentives Program (EQIP) funds to assist land owners within the GPA to cost/share installation of the following conservation practices:

1. Brush Management (5000 ac.) - Removal, reduction, or manipulation of non herbaceous plants.
2. Diversions (2500 linear feet) – Dirt structure built to divert or slow water flow.
3. Fencing – (2 miles) – A constructed barrier to livestock.
4. Grazing Land Mechanical Treatment – (1000 ac.) – Modifying physical soil and or plant conditions with mechanical tools by treatments such as pitting contour furrowing, and ripping or sub-soiling.
5. Livestock Pipeline (2 miles) - Pipeline installed for conveying water for livestock.
6. Pond (5 ea.) – A water impoundment made by constructing a dam or embankment or by excavating a pit or dugout.
7. Prescribed Burning (1000 ac.) – Applying controlled fire to predetermined areas.
8. Trough/Tank – (5 ea.) – A trough or tank, with needed devices for water control installed to provide drinking water for livestock.
9. Water Spreading(500 cu. yds.) – Diverting or collecting runoff from natural channels gullies, or streams with a system of dams, dikes, ditches, or other means, and spreading it over relatively flat areas.
10. Wells (2 ea.) – A well constructed or improved to provide water for livestock and wildlife.

11. Wildlife Upland Habitat Management (5000 ac.) – Creating, maintaining, or enhancing areas, for food and cover for upland wildlife.
12. Prescribed Grazing (53,000 ac.) – The controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified objective.

ALTERNATIVES CONSIDERED BUT NOT STUDIED IN DETAIL:

One alternative discussed was to implement brush management only without grazing management practices. This alternative was not studied in detail because it would not effectively reduce erosion, increase soil fertility, nor expand biodiversity.

SCOPING OF ISSUES FOR UNIQUE AND PROTECTED RESOURCES IN THE AREA:

An interdisciplinary team of NRCS resource specialists conducted a review of the area to identify unique and protected resources and other special issues of concern. An open public meeting was held in Mountainair to obtain input from concerned citizens. The Claunch-Pinto Soil and Water Conservation District (SWCD) identified this GPA for potential conservation activities in several newsletters (circulation 2000). Four conservation tours were conducted to view resource concerns and conservation practices. The SWCD has monthly meeting that meet New Mexico State Open Meetings Standards, which are open to the public. The Local Work Group met on 5/9/01 to receive public comment and discuss actions proposed for the GPA. A list of individuals, agencies, and groups invited to participate in the Local Work Group meeting is attached. Several newspaper articles and brochures have been published, and many information/education presentations have been given to citizen and professional groups. No major controversy was registered concerning the proposed action.

Threatened and Endangered Species of Concern: A record search of the US Fish & Wildlife Service and the NM Game & Fish biota information systems shows the Mexican Spotted Owl, Bald Eagle, and the Gray Vireo are species that could frequent the area. General Habitat Associations for the Mexican Spotted Owl and the Bald Eagle are generally different from the areas being treated in this GPA. Distribution and Habitat Associations for the Gray Vireo both limit the possibility of impact on the species. NRCS has determined that there will be no effects on the Gray Vireo and Bald Eagle. Future consultation with the US Fish and Wildlife Service will occur on the Mexican spotted owl prior to implementation of the proposed action. Other species shown on FWS county lists will not be affected by the proposed action as determined by NRCS.

Cultural Resources and Historic Properties: NRCS has completed a cultural resources records search, and known sites were identified. The density of such sites is low. To ensure site-specific protection, field surveys will be conducted on each land disturbing practice. Consultation will be conducted with the NM State Historic Preservation Officer (SHPO) before construction begins. Physical evidence from field surveys or preexisting

evidence, as a result of SHPO consultation, will dictate that projects will be moved and/or redesigned.

Riparian: Approximately 150 acres of riparian area exists in the GPA. These areas are invaded with varied degrees of introduced salt cedar. Most brush management activities in the riparian areas will be accomplished by hand with limited amounts of chemical use. All chemical applications will be completed by a licensed applicator in accordance with product label directions.

Wetlands: No actions are planned in wetlands.

IMPACTS AND EFFECTS OF ALTERNATIVES:

ALTERNATIVE 1. NO ACTION:

This alternative will continue with current activities. Historically, landowners have developed and implemented a few conservation plans. Currently, less than 25 % of the GPA area receives improved resource management in any one year. The identified resource concerns will continue to accelerate. The ongoing conservation program, which includes limited technical and financial assistance from NRCS will continue at the same or reduced levels. This will result in approximately 1% of juniper invasion area being treated in 20 years. No accelerated resource planning and application will be available to landowners.

Lack of proper management and treatment will continue the degradation and loss of resources. Invasion of rangeland by pinon and juniper will expand, resulting in ecological site degradation. Erosion will continue to increase which will result in loss of ecosystem site potential. Water loss through evapotranspiration will increase, recharge will lessen, and runoff will decrease in quality. Soil structure and condition will degrade. Food and habitat for wildlife and livestock will continue to decline. This alternative provides very limited resource benefits, and the area economy will continue to be depressed. It would not support watershed resource sustainability and health.

ALTERNATIVE 2. PROPOSED ACTION:

Impacts and effects of the proposed conservation practices included in the proposed action are as follows:

1. **Brush Management** – Brush will be controlled through mechanical, chemical, and hand applications. Mechanical work will be done with a crawler tractor, rubber tired front-end loader, tree shear, or tree saw. Two crawler tractors with a cable or chain between could be used. Chemical controls will be limited to light infestation areas of primary invasion with brush less than 5 ft. in height. All chemical applications will be completed by a licensed applicator in accordance with label directions. Very little chemical controls will be planned. Hand controls will be accomplished by hand axing or chainsawing.

Short-term impacts: Soil will be disturbed when crawler tractors are used (5-25% of the area would be disturbed). Dust and carbon monoxide will temporarily be in the air in isolated areas. Small pits will be created where roots are removed. Up to 95% of the brush will be removed. Local animals will be temporarily displaced.

Long-term impacts: Reduced wind and water erosion due to increased herbaceous vegetation establishment within a 3-5 year period. Increased water recharge and reduced runoff. Lane & Barns, 1986, show that deep percolation below the pinon-juniper root zone results in return flow or base flow in intermittent and perennial streams. Eddleman, 1995, found that a 12" diameter western juniper transpired 14 gallons of water per day on an average spring day and 32 gallons per day on an average summer day. Reduced suspended particulate material due to increased herbaceous cover. Increased biodiversity. Local ecological site condition evaluations are documented showing 3 species of vegetation prior to brush management activities and 10-15 species after brush controls. Improved economic condition due to increased productivity.

2. **Diversions** – Small dirt structures (25-75 cu. yds) will be constructed using a crawler tractor, front-end loader, or farm tractor.

Short-term impacts: There will be disturbed soil and complete denuding of vegetation on small sites approximately 250 – 500 sq. ft.

Long-term impacts: The structures will systematically slow runoff and sedimentation while increasing groundwater recharge. Bare ground area will revegetate within 3-5 years.

3. **Fencing** – Pasture division is necessary for livestock distribution control for implementation of progressive grazing management systems. Most (95%) of the fences will be 4-wire barbed wire. The remaining 5% will be woven wire. Fences will be designed to allow deer and antelope movement.

Short-term impacts: Trees and shrubs will be cleared in the fence right-of-way. The clearing will be 20 ft. wide for the length of the fence. The openings will become livestock and wildlife movement routes. The fences structure will become perch sites for song birds and raptures. There will be an aesthetic impact.

Long-term impacts: The cleared area will revegetate to herbaceous species within a 3-5 year period. The fences will allow control of livestock movement to develop grazing management systems that will increase plant vigor, litter, seed production, and seedling establishment.

4. **Grazing Land Mechanical Treatment** – Several herbaceous sites have a monoculture of blue grama grass. Ripping these sites with a farm chisel, approximately 6 “ deep on 1’ centers.

Short-term impacts: Herbaceous vegetation will be killed and soil disturbed on approximately 10% of the treated area .

Long-term impacts: Interspecies for water percolation and cool season species growth. Increased biodiversity will result.

5. **Livestock Pipeline** – Pipelines are necessary to support grazing management programs. Pipelines will be constructed with plastic pipe (1”-1.5”). The pipe will be buried 24” underground by mechanical means using a grader, crawler cat, or rubber tired trencher.

Short-term impacts: Trees and shrubs will be cleared on the pipeline right-of-way. The clearing will be 20’ wide. All vegetation will be removed and soil disturbed on a 6’ wide path the complete length of the pipeline for grader installations and 2’ wide for crawler tractor or rubber tired trenchers. There will be an aesthetic impact. Wildlife distribution will increase.

Long-term impacts: Progressive grazing management will be implemented. Wildlife populations and diversity will increase.

6. **Pond** – Larger dirt structures (500-1000 cu. yds) will be constructed using a crawler tractor, rubber tired front- end loader, or farm tractor.

Short-term impacts: There will be disturbed soil and complete denuding of vegetation on sites approximately 5000 sq. ft. in size.

Long-term impacts: The structures will slow runoff and sedimentation, increase groundwater recharge, provide water for livestock and wildlife distribution, and become a tool for use in a grazing management program.

7. **Prescribed Burning** – The natural impact of fire will be reintroduced on selected loamy and limy ecological sites. The fires will be conducted under a prescription of 10-20 % relative humidity, < 70 degree temperature, 10-15 mph winds. Soil moisture will be present. Burns will be in early spring or late fall when growth and reproduction is not present. A bare ground, mineral line will be constructed to remove all vegetation in an area approximately 20’ wide around the entire burn area. A black line consisting of preburned material from the 20’ bare ground line to 500’ within the prescribed burn area around the entire project will be required according to NRCS Field Office Technical Guide.

Short-term impacts: Depending on the intensity and duration of the burn, various percentages of the vegetation will be removed. Typical burns remove approximately 50-75% of the vegetation. Soil impacts including biota effects will be reduced due to prescription perimeters. Individual animals will be temporarily displaced. There will be an aesthetic impact.

Long-term impacts: Refer to long-term impacts under Brush Management above.

8. **Trough/Tank** – Steel and fiberglass water holding facilities will be constructed and placed.
The largest tanks will require 1000 sq. ft. of level ground. Construction will be by hand with the possible use of a rubber tired front-end loader or farm tractor.

Short-term impacts: Soil disturbance and vegetation removal will be required. There will be a visual impact. Water will be continually available. Wildlife distribution will increase.

Long-term impacts: Progressive grazing management will be implemented. Wildlife populations and species diversity will increase.

9. **Water Spreading** – Small earth structures, less than 2' high, will be constructed. Structures will be up to 500' long.

Short-term impacts: Approximately 10' of soil disturbance and vegetation removal along the length of the structure will occur.

Long-term impacts: Runoff will be slowed. Water recharge will increase. Cool season plant species will revegetate the disturbed area in 3-5 years.

10. **Wells** – Wells are needed to supply permanent sources of water. Water depth will range from 250 ft. to 1000 ft. Rotary and cable drilling rigs will be used.

Short-term impacts: A drilling pad approximately 10'X10' will be cleared of vegetation and soil disturbed. Noise pollution and visual impacts will occur for approximately 2-5 days.

Long-term impacts: Progressive grazing management will be implemented. Wildlife populations and species diversity will increase.

11. **Wildlife Upland Habitat Management** – Brush will be removed to create habitat as described under Brush Management above.
Short-term impacts: Refer to Brush Management above.

Long-term impacts: Individual wildlife populations and the expanse of the wildlife community will increase.

12. Prescribed Grazing – Management is essential to sustain impacts of the conservation practices.

Short-term impacts: Control of livestock grazing patterns, intensity, and duration.

Long-term impacts: Ecological condition will change. Biodiversity will increase. Water infiltration will increase and runoff will decrease. Soil health and fertility will be enhanced. More biota will be present in the soil profile.

Estimated total cost for implementation of this alternative is \$100,000 for a 4 year period. There is an estimated water savings of approximately 11786 ac. ft. per summer period. Additional effects and specific construction specifications are documented in the Field Office Technical Guide.

TABLE 1 – ALTERNATIVE 2 (CUMULATIVE EFFECTS)

Practice	EQIP FUNDING	Total Amount (including other agency and landowner)
Brush Mgmt.	5000 ac.	10,000 ac.
Diversions	2500 ft.	3500 ft..
Fencing	10560 ft.	26400 ft.
Grazingland Mech. Treat.	1000 ac.	1000 ac.
Livestock Pipeline	10560 ft.	15840 ft.
Pond	5 ea.	7 ea.
Prescribed Burn	1000 ac.	3000 ac.
Trough/Tank	5 ea.	10 ea.
Water Spreading	500 cu yds.	500 cu. yds
Wells	2 ea.	3 ea.
WL Upland Hab. Mgmt.	5000 ac.	5000 ac.
Prescribed Grazing	53,000 ac.	63,000

TABLE 2 COMPARISON TABLE Effects on Needs

Practice	Alternative 1	Alternative 2	Difference
Brush Mgmt.	750 ac.	5000 ac.	4250 ac. (10607 ac. ft. of water)
Diversions	250 ft,	2500 ft.	2250 ft.
Fencing	5280 ft.	10560 ft.	5280 ft.
Grazingland Mech. Treat.	0	1000 ac.	1000 ac.

Livestock Pipeline	2640 ft.	10560 ft.	7920 ft.
Pond	2 ea.	5 ea.	3 ea.
Prescribed Burn	0	1000 ac.	1000 ac. (1179 ac. ft. of water)
Trough/Tank	2	5 ea.	3 ea.
Water Spreading	0	500 cu yds.	500 cu. yds.
Wells	2 ea.	2 ea.	0 ea.
WL Upland Hab. Mgmt.	0	5000 ac.	5000 ac. (NCS)
Prescribed Grazing	20,000 ac.	53,000 ac.	80,000 ac. (SI change 25 to 50)

PERSONS AND AGENCIES CONSULTED:

- Claunch-Pinto Soil and Water Conservation District
- HUB Resource Conservation & Development Council
- Bureau of land Management
- US Park Service
- New Mexico State Land Office
- United States Forest Service
- Farm Service Agency
- NM Farm & Livestock Bureau
- Local Work Group (List of participants attached)

REFERENCES:

- NRCS Field Office Technical Guide, Section III, Quality Criteria
- NRCS Field Office Technical Guide, Section IV, Standards and Specifications
- US Fish & Wildlife Service, Threatened and Endangered species list for NM
- NM Game & Fish, BISON report, internet
- Lane & Barnes, 1986 – Lane, Leonard J. and Fairley J. Barnes. “Water Balance Calculations in Southwest Woodlands.” Pinon-Juniper Conference, Reno, NV.
- Eddleman, 1995 – Telephone conversation between Dr. Lee Eddleman, Oregon State University, and Richard Spencer, District Conservationist, NRCS, Mountainair, NM.
- USDA Natural Resources Conservation Service, 1999, “Abo Arroyo Watershed Health Plan”,

**FINDING OF NO SIGNIFICANT IMPACT
FOR THE IMPLEMENTATION OF EQIP
IN THE ABO ARROYA WATERSHED GPA**

INTRODUCTION:

The Abo Arroyo Geographic Priority Area funding is a Federally assisted action under the Environmental Quality Incentives Program (EQIP), with assistance from the Natural Resources Conservation Service (NRCS). An environmental assessment was undertaken in connection with the development of this proposed action. This assessment was conducted in consultation with Local, State, and Federal agencies. Data developed during the assessment are available, upon request, from:

**US DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
MOUNTAINAIR FIELD OFFICE
P.O. BOX 129
MOUNTAINAIR, NEW MEXICO 87036**

The Environmental Assessment (EA) is attached for reference.

DETERMINATION OF SIGNIFICANCE:

Table 1

CONTEXT	INTENSITY	REASON FOR NON-SIGNIFICANCE
Water Saved – 11786 ac. ft. in the summer period (6.8% total woody species consumptive usage)	Permanent water savings each year for a 20 year period.	Water allocation is beyond NRCS control. Consumptive use of woody species on untreated area will remain at 162,320 ac. ft. in the summer.
Native plant community treatment - 6000 ac. is treated for brush invasion	Change in vegetation for 20-50 years.	P/J sites (68,867 ac.) throughout the GPA will essentially remain unchanged.

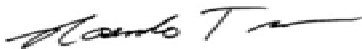
The above Table 1 addresses impacts on environment. Other considerations related to context and intensity are discussed as follows:

1. Public Health or Safety – Any chemical brush control will be conducted by a licenced applicator in compliance with approved label directions. No significant impacts.

2. Unique Character of the Area – There are 65 million acres of P/J vegetation in New Mexico, Colorado, Utah, and Arizona, therefore, this area is not considered unique. All project areas will be inventoried for historical and/or culture sites and conservation practices redesigned or moved to avoid impacts. No significant impacts.
3. Controversy – No major controversy was presented at public meetings or received from outreach efforts. No significant impacts.
4. Uncertainty – The proposed actions under Alternative 2 have been carried on in the area for over 60 years. Results have been measured, analyzed, and observed over time by professionals to stimulate ecosystem health. No significant impacts.
5. Precedent for Future Actions – Actions of this type have been carried on for a long period of time in this GPA and this proposal is not precedence setting. No significant impacts.
6. Cumulative Impacts – The cumulative impacts are only slightly larger than Alternative 2. No significant impacts.
7. Effects on National Register of Historic Places or Cultural Resources – All project areas will be inventoried for historical and/or cultural sites and conservation practices redesigned or moved to avoid impacts. No significant impacts.
8. Endangered Species or Critical Habitat – No effect determination for endangered species. No significant impacts .
9. Violation of the Laws – There are no violations of laws know to occur. No significant impacts.

FINDING OF NO SIGNIFICANT IMPACT:

This finding is based on the evidence presented in the Environmental Assessment and the analyses of Alternatives for this GPA. Based on the assessment and the reasons given above, I find the alternatives analyzed in the EA will have no significant impact on the quality of the human environment. Therefore, an environmental impact statement will not be prepared.



ROSENDO TREVINO
State Conservationist

December 20, 2001

Date